

Patent Claims

1. Polymer mixture, comprising

- 5 a) a polymer matrix which is composed of a
(meth)acrylate (co)polymer or of a mixture of
(meth)acrylate (co)polymers with a Vicat
softening point VSP (ISO 306-B50) of at least
104°C and/or of a (meth)acrylimide (co)polymer,
10 b) an impact modifier which is based on
crosslinked poly(meth)acrylates and which does
not have covalent bonding to the polymer matrix
a),
15 c) from 1 to 15% by weight of plastics particles
composed of crosslinked polymers based on
polymethyl methacrylate, on polystyrene and/or
on polysilicones, with a median particle size
20 in the range from 1 to 30 µm,

where a), b) and c) give a total of 100% by
weight, and where the polymer mixture may also
comprise conventional additives, auxiliaries
25 and/or fillers, and a test specimen injection-
moulded from the polymer mixture simultaneously
has the following properties:

30 a roughness value R_z to DIN 4768 of at least
0.7 µm,
a gloss (R 60°) to DIN 67530 of at most 40, and
also a Vicat softening point VSP (ISO 306-B50) of
at least 90°C.

- 35 2. Polymer mixture according to Claim 1,
characterized in that the components are present
with the following quantitative proportions

- a) from 25 to 75% by weight

- b) from 5 to 60% by weight
- c) from 1 to 15% by weight.

3. Polymer mixture according to Claim 1 or 2,
5 characterized in that the impact modifier b) has a two- or three-shell structure.
4. Polymer mixture according to one or more of Claims
1 to 3, characterized in that the polymer matrix
10 a) is composed of a (meth)acrylate (co)polymer composed of from 96 to 100% by weight of methyl methacrylate and from 0 to 4% by weight of methyl acrylate, ethyl acrylate and/or butyl acrylate.
- 15 5. Polymer mixture according to one or more of Claims 1 to 3, characterized in that the polymer matrix a) is a copolymer composed of methyl methacrylate, styrene and maleic anhydride.
- 20 6. Polymer mixture according to Claim 5, characterized in that the polymer matrix a) is a copolymer composed of

from 50 to 90% by weight of methyl methacrylate,
25 from 10 to 20% by weight of styrene and
from 5 to 15% by weight of maleic anhydride.
7. Polymer mixture according to one or more of Claims
1 to 3, characterized in that the constituents a)
30 and b) of the polymer mixture are introduced individually or in the form of a compounded material which comprises the following components

d) a low-molecular-weight (meth)acrylate
35 (co)polymer,

characterized by a solution viscosity in chloroform at 25°C (ISO 1628 - Part 6) smaller than or equal to 55 ml/g

e) an impact modifier based on crosslinked poly(meth)acrylates

5 f) a relatively high-molecular-weight (meth)acrylate (co)polymer,

characterized by a solution viscosity in chloroform at 25°C (ISO 1628 - Part 6) smaller
10 than or equal to 65 ml/g and/or

g) a (meth)acrylate (co)polymer other than d),

characterized by a solution viscosity in chloroform at 25°C (ISO 1628 - Part 6) of from 50
15 to 55 ml/g

where each of the components d), e), f) and/or g) may be an individual polymer or else a mixture of
20 polymers,

and where d), e), f) and/or g) give a total of 100% by weight,

25 and where the polymer mixture may also comprise conventional additives, auxiliaries and/or fillers and

where a test specimen produced from the polymer mixture of components d), e), f) and/or g) simultaneously has the following properties:
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- I. a tensile modulus (ISO 527) of at least 2600 MPa,
- 35 II. a Vicat softening point VSP (ISO 306-B50) of at least 109°C,
- III. an impact strength (ISO 179-2D, flatwise) of at least 17 kJ/m², and

IV. a melt index MVR (ISO 1133, 230°C/3.8 kg) of at least 1.5 cm³/10 min.

- 5 8. Polymer mixture according to Claim 7, characterized in that the components are present with the following quantitative proportions and give a total of 100% by weight:
- 10 d) from 25 to 75% by weight
e) from 10 to 60% by weight
f) and/or g) from 10 to 50% by weight.
- 15 9. Polymer mixture according to Claim 7 or 8, characterized in that component d) is a copolymer composed of methyl methacrylate, styrene and maleic anhydride.
- 20 10. Polymer mixture according to Claim 9, characterized in that component d) is a copolymer composed of
- 25 from 50 to 90% by weight of methyl methacrylate, from 10 to 20% by weight of styrene and from 5 to 15% by weight of maleic anhydride.
- 30 11. Polymer mixture according to one or more of Claims 7 to 10, characterized in that component e) has a two- or three-shell structure.
- 35 12. Polymer mixture according to one or more of Claims 7 to 11, characterized in that component f) is a copolymer composed of methyl methacrylate, styrene and maleic anhydride.
13. Polymer mixture according to Claim 12, characterized in that component f) is a copolymer composed of
- from 50 to 90% by weight of methyl methacrylate,

from 10 to 20% by weight of styrene and
from 5 to 15% by weight of maleic anhydride.

- 5 14. Polymer mixture according to one or more of Claims
7 to 13, characterized in that component g) is a
homopolymer or copolymer composed of at least 80%
by weight of methyl methacrylate and, where
appropriate, up to 20% by weight of other monomers
copolymerizable with methyl methacrylate.
- 10 15. Polymer mixture according to Claim 14,
characterized in that component g) is a copolymer
composed of from 95 to 99.5% by weight of methyl
methacrylate and from 0.5 to 5% by weight of
15 methyl acrylate, ethyl acrylate and/or butyl
acrylate.
- 20 16. Polymer mixture according to one or more of Claims
1 to 15, characterized in that a lubricant is
present as auxiliary.
- 25 17. Polymer mixture according to Claim 16,
characterized in that stearyl alcohol is present
as mould-release agent.
- 30 18. Polymer mixture according to one or more of Claims
1 to 17, characterized in that it takes the form
of a pelletized moulding composition.
- 35 19. Process for producing injection mouldings in a
manner known per se, characterized in that use is
made of a polymer mixture according to one or more
of Claims 1 to 18 as starting material.
20. Injection moulding, capable of production in a
process according to Claim 19.
21. Injection moulding according to Claim 20,
characterized in that it has a roughness value R_z

to DIN 4768 of at least 0.7 μm , a gloss (R 60°) to DIN 67530 of at most 40 and a Vicat softening point VSP (ISO 306-B50) of at least 90°C.

- 5 22. Injection moulding according to Claim 20 or 21, characterized in that it has one or more of the following properties
- 10 I. a tensile modulus (ISO 527) of at least 2600 MPa,
- II. a Vicat softening point VSP (ISO 306-B50) of at least 108°C,
- III. an impact strength (ISO 179-2D, flatwise) of at least 10 kJ/m², and
- 15 IV. a melt index MVR (ISO 1133, 230°C/3.8 kg) of at least 0.5 cm³/10 min.
- 20 23. Use of the injection mouldings according to one or more of Claims 20 to 23 as parts of household appliances, of communication devices, or of devices for hobbies or sports, or as bodywork parts or parts of bodywork parts in the construction of automobiles, of ships or of aircraft.